

WE CLAIM:

1. A protein derived from an enterically transmitted non-A/non-B viral hepatitis agent whose genome contains a region which is homologous to a coding region of the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

2. The protein of claim 1, which is encoded by a complete coding region within said 1.33 kb EcoRI insert.

3. A recombinant protein derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to a coding region of a DNA molecule having a first sequence (SEQ ID NO.1):

20	AGACCTGTCC CTGTTGCAGC TGTCTACCA CCCTGCCCG AGCTCGAACAA GGGCCTTCTC	60
25	TACCTGCCCG AGGAGCTCAC CACCTGTGAT AGTGTGTA CATTGAAATT AACAGACATT	120
30	GTGCACTGCC GCATGGCCGC CCCGAGCCAG CGCAAGGCCG TGCTGTCCAC ACTCGTGGGC	180
35	CGCTACGGCG GTCGCACAAA GCTCTACAAT GCTTCCACT CTGATGTTCG CGACTCTCTC	240
40	GCCCCGTTTA TCCCGGCCAT TGGCCCCGTA CAGGTTACAA CTTGTGAATT GTACGAGCTA	300
45	GTGGAGGCCA TGGTCGAGAA GGGCCAGGAT GGCTCCGCCG TCCTTGAGCT TGATCTTGC	360
	AACCGTGACG TGTCCAGGAT CACCTTCTTC CAGAAAGATT GTAACAAGTT CACCACAGGT	420
	GAGACCATTG CCCATGGTAA AGTGGGCCAG GGCATCTCGG CCTGGAGCAA GACCTCTGC	480
	GCCCTCTTG GCCCTGGTT CGCGCTATT GAGAAGGCTA TTCTGGCCCT GCTCCCTCAG	540
	GGTGTGTTT ACGGTGATGC CTTGATGAC ACCGTCTTCT CGGGGGCTGT GGCCGCAGCA	600
	AAGGCATCCA TGGTGTTGA GAATGACTTT TCTGAGTTG ACTCCACCCA GAATAACTTT	660
	TCTCTGGTC TAGAGTGTGC TATTATGGAG GAGTGTGGGA TGCCGCAGTG GCTCATCCGC	720
	CTGTATCACC TTATAAGGTC TGCGTGGATC TTGCAGGCC CGAAGGAGTC TCTGCGAGGG	780
	TTTTGGAAGA AACACTCCGG TGAGCCGGC ACTCTTCTAT GGAATACTGT CTGGAATATG	840
	GCCGTTATTA CCCACTGTTA TGACTTCCGC GATTTCAAGG TGGCTGCCTT TAAAGGTGAT	900

	GATTGATAG TGCTTGCAG TGAGTATCGT CAGAGTCAG GAGCTGCTGT CCTGATCGCC	960
5	GGCTGTGGCT TGAAGTTGAA GGTAGATTTC CGCCCGATCG GTTGTATGC AGGTGTTGTG	1020
	GTGGCCCCCG GCCTTGGCGC GCTCCCTGAT GTTGTGCCT TCGCCGGCCG GCTTACCGAG	1080
	AAGAATTGGG GCCCTGGCCC TGAGCGGGCG GAGCAGCTCC GCCTCGCTGT TAGTGATTTC	1140
10	CTCCGCAAGC TCACGAATGT AGCTCAGATG TGTGTGGATG TTGTTCCCG TGTTATGGG	1200
	GTTTCCCTG GACTCGTTCA TAACCTGATT GGCATGCTAC AGGCTGTTGC TGATGGCAAG	1260
	GCACATTTCA CTGAGTCAGT AAAACCAAGTG CTCGA	1295
15	a second sequence (SEQ ID NO.5):	
	TCGAGCACTG GTTTACTGA CTCAGTGAAC TGTGCCTGC CATCAGCAAC AGCCTGTAGC	60
20	ATGCCAATCA GGTTATGAAC GAGTCCAGGG GAAACCCAT AAACACGGGA ACAACATCC	120
	ACACACATCT GAGCTACATT CGTGAGCTTG CGGAGGAAAT CACTAACAGC GAGGCGGAGC	180
	TGCTCCGCCG GCTCAGGGCC AGGGCCCCAA TTCTTCTCGG TAAGCCGGCC GGCGAAGCGC	240
25	ACAACATCAG GGAGCGGCC AAGGCCGGG GCCACCACAA CACCTGCATA CAAACCGATC	300
	GGGCGGAAAT CTACCTTCAA CTTCAAGCCA CAGCCGGCGA TCAGGACAGC AGCTCCTGGA	360
30	CTCTGACGAT ACTCACTGCA AAGCACTATC GAATCATCAC CTTTAAAGGC AGCCACCTGA	420
	AAATCGCGGA AGTCATAACA GTGGTAATA ACGGCCATAT TCCAGACAGT ATTCCATAGA	480
	AGAGTGCCGG GCTCACCGGA GTGTTCTTC CAAACCCCTC GCAGAGACTC CTTGGGGCC	540
35	TGCAAGATCC ACGCAGACCT TATAAGGTGA TACAGGCCGA TGAGCCACTG CGGCATCCCA	600
	CACTCCTCCA TAATAGCACA CTCTAGACCC AGAGAAAAGT TATTCTGGGT GGAGTCAAAC	660
40	TCAGAAAAGT CATTCTCAA CACCATGGAT GCCTTGCTG CGGCCACAGC CGCCGAGAAG	720
	ACGGTGTAT CAAAGGCATC ACCGTAAAAC ACACCCCTGAG GGAGCAGGGC CAGAATAGCC	780
	TTCTCAATAG CGCGGAACCA AGGGCCAAAG AGGGCGCAGA AGGTCTTGCT CCAGGCCGAG	840
45	ATGCCCTGGC CCACTTACG ATGGCAATG GTCTCACCTG TGGTGAACCT GTTACAATCT	900
	TTCTGGAAGA AGGTGATCCT GGACACGTCA CGGTTGCAA GATCAAGCTC AAGGACGGCG	960
	GAGCCATCCT GGCCCTCTC GACCATGGCC TCCACTAGCT CGTACAATTC ACAAGTTGTA	1020
50	ACCTGTACGG GGCCAATGGC CGGGATAAAA CGGGCGAGAG AGTCGCGAAC ATCAGAGTGG	1080
	GAAGCATTGT AGAGCTTGT GCGACCGCCG TAGCGGCCA CGAGTGTGGA CAGCACGGCC	1140
55	TTGCGCTGGC TCGGGGCGGC CATGCGGCAG TGCACAATGT CTGTTAATTC AAATGTTACG	1200

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	ACACTATCAC AGGTGGTGAG CTCCTGGGGC AGGTAGAGAA GGCCCTGTT GAGCTCGGGG	1260
	CAGGGTGGTA GAACAGCTGC AACAGGGACA GGTCT	1295
5	a third sequence (SEQ ID NO.6):	
	AGGCAGACCA CATATGTGGT CGATGCC ATGGAGGCC ATCAGTTAT TAAGGCTCCT	57
	GGCATCACTA CTGCTATTGA GCAGGGCTGCT CTAGCAGCGG CCAACTCTGC CCTGGCGAAT	117
10	GCTGTGGTAG TTAGGCCTT TCTCTCTCAC CAGCAGATTG AGATCCTCAT TAACCTAATG	177
	CAACCTCGCC AGCTTGTGTTT CCGCCCCGAG GTTTTCTGGA ATCATCCCCT CCAGCGTGTC	237
	ATCCATAACG AGCTGGAGCT TTACTGCCGC GCCCGCTCCG GCCGCTGTCT TGAAATTGGC	297
15	GCCCCATCCCC GCTCAATAAA TGATAATCCT AATGTGGTCC ACCGCTGCTT CCTCCGCCCT	357
	GTTGGCGTG ATGTTCAGCG CTGGTATACT GCTCCCACTC GCAGGGCCGGC TGCTAATTGC	417
20	CGGGCTTCCG CGCTGCGCGG GCTTCCCGCT GCTGACCGCA CTTACTGCCT CGACGGGTTT	477
	TCTGGCTGTA ACTTTCCCGC CGAGACTGGC ATCGCCCTCT ACTCCCTTCA TGATATGTCA	537
25	CCATCTGATG TCGCCGAGGC CATGTTCCGC CATGGTATGA CGCGGCTCTA TGCCGCCCTC	597
	CATCTTCCGC CTGAGGTCT GCTGCCCCCT GGCACATATC GCACCGCCTC GTATTTGCTA	657
	ATTCATGACG GTAGGCGCGT TGTGGTGACG TATGAGGGTG ATACTAGTGC TGGTTACAC	717
30	CACGATGTCT CCAACTTGCG CTCCCTGGATT AGAACCAACCA AGGTTACCGG AGACCATCCC	777
	CTCGTTATCG AGCGGGTTAG GGCCATTGGC TGCCACTTTG TTCTCTTGCT CACGGCAGCC	837
35	CCGGAGCCAT CACCTATGCC TTATGTTCT TACCCCCGGT CTACCGAGGT CTATGTCCGA	897
	TCGATCTCG GCCGGGGTGG CACCCCTTCC TTATTCCAA CCTCATGCTC CACTAAGTCG	957
	ACCTTCCATG CTGTCCTGC CCATATTGG GACCGTCTTA TGCTGTTCGG GGCCACCTTG	1017
40	GATGACCAAG CCTTTGCTG CTCCCCTTTA ATGACCTACC TTGCGGGCAT TAGCTACAAG	1077
	GTCACTGTTG GTACCCCTGT GGCTAATGAA GGCTGGAATG CCTCTGAGGA CGCCCTCACA	1137
	GCTGTTATCA CTGCCGCCTA CCTTACCAATT TGCCACCAGC GGTATCTCCG CACCCAGGCT	1197
45	ATATCCAAGG GGATGCGTCG TCTGGAACGG GAGCATGCC AGAAGTTAT AACACGCCCTC	1257
	TACAGCTGGC TCTTCGAGAA GTCCGGCCGT GATTACATCC CTGGCCGTCA GTTGGAGTT	1317
50	TACGCCCACT GCAGGGCGCTG GCTCTCCGCC GGCTTTCATC TTGATCCACG GGTGTTGGTT	1377
	TTTGACGAGT CGGCCCCCTG CCATTGTAGG ACCGCGATCC GTAAGGGCGCT CTCAAAGTTT	1437
	TGCTGCTTCA TGAAGTGGCT TGGTCAGGAG TGCACCTGCT TCCTTCAGCC TGCAGAAGGC	1497
55	GCCGTGGCG ACCAGGGTCA TGATAATGAA GCCTATGAGG GGTCCGATGT TGACCCCTGCT	1557

	GAGTCGGCCA TTAGTGACAT ATCTGGGTCC TATGTCGTCC CTGGCACTGC CCTCCAACCG	1617
5	CTCTTACCAAGG CCCTCGATCT CCCCCGCTGAG ATTGTGGCTC GCGCGGGCCG GCTGACCGCC	1677
	ACAGTAAAGG TCTCCCAGGT CGATGGGCGG ATCGATTGCG AGACCCCTCT TGGTAACAAA	1737
	ACCTTTCGCA CGTCGTTCGT TGACGGGGCG GTCTTAGAGA CCAATGGCCC AGAGCGCCAC	1797
10	AATCTCTCCT TCGATGCCAG TCAGAGCACT ATGGCCGCTG GCCCTTCAG TCTCACCTAT	1857
	GCCGCCCTCTG CAGCTGGGCT GGAGGTGCGC TATGTTGCTG CCGGGCTTGA CCATCGGGCG	1917
15	GTTTTGCCCG CCGGTGTTTC ACCCCGGTCA GCCCCCGGCG AGGTTACCGC CTTCTGCTCT	1977
	GCCCTATACA GGTTAACCG TGAGGCCAG CGCCATTGCG TGATCGGTAA CTTATGGTTC	2037
	CATCCTGAGG GACTCATTGG CCTCTTCGCC CCGTTTCGC CCGGGCATGT TTGGGAGTCG	2097
20	GCTAATCCAT TCTGTGGCGA GAGCACACTT TACACCCGTA CTTGGTCGGA GGTTGATGCC	2157
	GTCTCTAGTC CAGCCCGGCC TGACTTAGGT TTTATGTCTG AGCCTTCTAT ACCTAGTAGG	2217
25	GCCGCCACGC CTACCCCTGGC GGCCCCCTCTA CCCCCCCCCTG CACCGGACCC TTCCCCCCCCT	2277
	CCCTCTGCCCG CGCGCCTTGC TGAGCCGGCT TCTGGCGCTA CGGCCGGGGC CCCGGCCATA	2337
	ACTCACCAGA CGGCCCCGGCA CCGCCGCCTG CTCTTCACCT ACCCGGATGG CTCTAAGGTA	2397
30	TTCGCCGGCT CGCTGTTCGA GTGACATGC ACGTGGCTCG TTAACCGCCTC TAATGTTGAC	2457
	CACCGCCCTG CGGGCGGGCT TTGCCATGCA TTTTACAAA GGTACCCCGC CTCCTTGAT	2517
35	GCTGCCTCTT TTGTGATGCG CGACGGCGCG GCCGCGTACA CACTAACCCC CGGGCCAATA	2577
	ATTCACTGCTG TCGCCCCCTGA TTATAGGTTG GAACATAACC CAAAGAGGCT TGAGGCTGCT	2637
	TATCGGGAAA CTTGCTCCCG CCTCGGCACC GCTGCATACC CGCTCCTCGG GACCGGCATA	2697
40	TACCAAGGTGC CGATCGGCCCG CAGTTTGAC GCCTGGGAGC GGAACCACCG CCCCCGGGGAT	2757
	GAGTTGTACC TTCTGAGCT TGCTGCCAGA TGGTTTGAGG CCAATAGGCC GACCCGCCCG	2817
45	ACTCTCACTA TAACTGAGGA TGTTGCACGG ACAGCGAATC TGGCCATCGA GCTTGACTCA	2877
	GCCACAGATG TCGGCCGGGC CTGTGCCGGC TGTCGGGTCA CCCCCGGCGT TGTTCAGTAC	2937
	CAGTTTACTG CAGGTGTGCC TGGATCCGGC AAGTCCCGCT CTATCACCCA AGCCGATGTG	2997
50	GACGTTGTCG TGGTCCCGAC GCGTGAGTTG CGTAATGCCT GGCGCCGTCG CGGCTTGCT	3057
	GCTTTACCC CGCATACTGC CGCCAGAGTC ACCCAGGGGC GCCGGGTTGT CATTGATGAG	3117
55	GCTCCATCCC TCCCCCTCA CCTGCTGCTG CTCCACATGC AGCGGGCCGC CACCGTCCAC	3177
	CTTCTTGGCG ACCCGAACCA GATCCCAGCC ATCGACTTG AGCACGCTGG GCTCGTCCCC	3237

	GCCATCAGGC CCGACTTAGG CCCCACCTCC TGGTGGCATG TTACCCATCG CTGGCCTGCG	3297
5	GATGTATGCG AGCTCATCCG TGGTGCATAC CCCATGATCC AGACCACTAG CCGGGTTCTC	3357
	CGTTCGTTGT TCTGGGGTGA GCCTGCCGTC GGGCAGAAAC TAGTGTTCAC CCAGGCGGCC	3417
	AAGCCCGCCA ACCCCGGCTC AGTACGGTC CACGAGGCGC AGGGCGCTAC CTACACGGAG	3477
10	ACCACTATTA TTGCCACAGC AGATGCCCGG GGCCTTATTTC AGTCGTCTCG GGCTCATGCC	3537
	ATTGTTGCTC TGACCGGCCA CACTGAGAAG TGCGTCATCA TTGACGCACC AGGCCTGCTT	3597
15	CGCGAGGTGG GCATCTCCGA TGCAATCGTT AATAACTTT TCCTCGCTGG TGGCGAAATT	3657
	GGTCACCAGC GCCCATCAGT TATTCCCCGT GGCAACCCCTG ACGCCAATGT TGACACCCCTG	3717
	GCTGCCTTCC CGCCGTCTTG CCAGATTAGT GCCTTCCATC AGTTGGCTGA GGAGCTTGGC	3777
20	CACAGACCTG TCCCTGTTGC AGCTGTTCTA CCACCCCTGCC CCGAGCTCGA ACAGGGCCTT	3837
	CTCTACCTGC CCCAGGAGCT CACCACCTGT GATAGTGTG TGACATTTGA ATTAACAGAC	3897
25	ATTGTGCACT GCCGCATGGC CGCCCCGAGC CAGCGCAAGG CCGTGCCTGTC CACACTCGTG	3957
	GGCCGCTACG GCGGTCGCAC AAAGCTCTAC AATGCTTCCC ACTCTGATGT TCGCGACTCT	4017
	CTCGCCCGTT TTATCCCGGC CATTGGCCCC GTACAGGTTA CAACTGTGA ATTGTACGAG	4077
30	CTAGTGGAGG CCATGGTCGA GAAGGGCCAG GATGGCTCCG CCGTCCTTGA GCTTGATCTT	4137
	TGCAACCGTG ACGTGTCCAG GATCACCTTC TTCCAGAAAG ATTGTAACAA GTTCACCACA	4197
35	GGTGAGACCA TTGCCCATGG TAAAGTGGGC CAGGGCATCT CGGCCTGGAG CAAGACCTTC	4257
	TGCGCCCTCT TTGGCCCTTG GTTCCCGCGCT ATTGAGAAGG CTATTCTGGC CCTGCTCCCT	4317
	CAGGGTGTGT TTTACGGTGA TGCCCTTGAT GACACCGTCT TCTCGCGGC TGTGGCCGCA	4377
40	GCAAAGGCAT CCATGGTGTT TGAGAATGAC TTTTCTGAGT TTGACTCCAC CCAGAATAAC	4437
	TTTTCTCTGG GTCTAGAGTG TGCTATTATG GAGGAGTGTG GGATGCCGCA GTGGCTCATC	4497
45	CGCCTGTATC ACCTTATAAG GTCTGCGTGG ATCTTGCAGG CCCCAGGAGA GTCTCTGCGA	4557
	GGGTTTTGGA AGAAACACTC CGGTGAGCCC GGCACCTCTTC TATGGAATAC TGTCTGGAAT	4617
	ATGGCCGTTA TTACCCACTG TTATGACTTC CGCGATTTTC AGGTGGCTGC CTTAAAGGT	4677
50	GATGATTGCA TAGTGCTTG CAGTGAGTAT CGTCAGAGTC CAGGAGCTGC TGTCTGATC	4737
	GCCGGCTGTG GCTTGAAGTT GAAGGTAGAT TTCCGCCGAGA TCGGTTGTA TGCAAGGTGTT	4797
55	GTGGTGGCCC CCGGCCTTGG CGCGCTCCCT GATGTTGTGC GCTTCGCCGG CCGGCTTACC	4857
	GAGAAGAATT GGGGCCCTGG CCCTGAGCGG GCGGAGCAGC TCCGCCTCGC TGTTAGTGAT	4917

	TTCCCTCCGCA AGCTCACGAA TGTAGCTCAG ATGTGTGTGG ATGTTGTTTC CCGTGTTTAT	4977
	GGGGTTTCCC CTGGACTCGT TCATAACCTG ATTGGCATGC TACAGGCTGT TGCTGATGGC	5037
5	AAGGCACATT TCACTGAGTC AGTAAAACCA GTGCTGACT TGACAAATTCA AATCTTGTGT	5097
	CGGGTGAAT GA ATAACATGTC TTTTGCTGCG CCCATGGGTT CGCGACCATG	5149
10	CGCCCTCGGC CTATTTGTT GCTGCTCCTC ATGTTTTGC CTATGCTGCC CGCGCCACCG	5209
	CCCGGTCAGC CGTCTGGCCG CCGTCGTGGG CGGCGCAGCG GCGGTTCCGG CGGTGGTTTC	5269
	TGGGGTGACC GGGTTGATTTC TCAGCCCTTC GCAATCCCCT ATATTCATCC AACCAACCCC	5329
15	TTCGCCCCCG ATGTCACCGC TGCGGCCGGG GCTGGACCTC GTGTCGCCA ACCCGCCCGA	5389
	CCACTCGGCT CCGCTTGGCG TGACCAGGCC CAGCGCCCCG CGTTGCCCTC ACGTCGTAGA	5449
20	CCTACACACAG CTGGGGCCGC GCCGCTAA CGCGGGTCGC TCCGGCCCAT GACACCCGC	5507
	CAGTGCCTGA TGTGACTCC CGCGGCCCA TCTTGCGCCG GCAGTATAAC CTATCAACAT	5567
	CTCCCCCTTAC CTCTTCCGTG GCCACCGGCA CTAACCTGGT TCTTATGCC GCCCCTTTA	5627
25	GTCCGCTTT ACCCCTTCAG GACGGCACCA ATACCCATAT AATGGCCACG GAAGCTTCTA	5687
	ATTATGCCCA GTACCGGGTT GCCCGTGCCA CAATCCGTTA CCGCCCGCTG GTCCCCAATG	5747
30	CTGTCGGCGG TTACGCCATC TCCATCTCAT TCTGGCCACA GACCACCACC ACCCGACGT	5807
	CCGTTGATAT GAATTCAATA ACCTCGACGG ATGTTGTAT TTTAGTCCAG CCCGGCATAG	5867
	CCTCTGAGCT TGTGATCCA AGTGAGCGCC TACACTATCG TAACCAAGGC TGGCGCTCCG	5927
35	TCGAGACCTC TGGGGTGGCT GAGGAGGAGG CTACCTCTGG TCTTGTATG CTTTGCATAC	5987
	ATGGCTCACT CGTAAATTCC TATACTAATA CACCCATAC CGGTGCCCTC GGGCTGTTGG	6047
40	ACTTGCCT TGAGCTTGAG TTTCGCAACC TTACCCCCGG TAACACCAAT ACGCGGGTCT	6107
	CCCGTTATTC CAGCACTGCT CGCCACCGCC TTGTCGCCG TGCGGACGGG ACTGCCGAGC	6167
	TCACCAACAC GGCTGCTACC CGCTTATGA AGGACCTCTA TTTTACTAGT ACTAATGGTG	6227
45	TCGGTGAGAT CGGCCGCGGG ATAGCCCTCA CCTGTGTTCAA CCTTGCTGAC ACTCTGCTTG	6287
	GCGGCCTGCC GACAGAATTG ATTTCGTCGG CTGGTGGCCA GCTGTTCTAC TCCCGTCCCG	6347
50	TTGTCTCAGC CAATGGCGAG CCGACTGTTA AGTTGTATAC ATCTGTAGAG AATGCTCAGC	6407
	AGGATAAGGG TATTGCAATC CGCATGACA TTGACCTCGG AGAATCTCGT GTGGTTATTC	6467
	AGGATTATGA TAACCAACAT GAACAAGATC GGCGACGCC TTCTCCAGCC CCATCGCGCC	6527
55	CTTTCTCTGT CCTTCGAGCT AATGATGTGC TTTGGCTCTC TCTCACCGCT GCCGAGTATG	6587

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	ACCAGTCCAC TTATGGCTCT TCGACTGGCC CAGTTTATGT TTCTGACTCT GTGACCTTGG	6647
5	TTAATTTGC GACCGCGCG CAGGCCGTTG CCCGGTCGCT CGATTGGACC AAGGTACAC	6707
	TTGACGGTCG CCCCCCTCC ACCATCCAGC AGTACTCGAA GACCTTCTTT GTCTGCCGC	6767
	TCCGCGGTAA GCTCTCTTC TGGGAGGCAG GCACAACTAA AGCCGGGTAC CCTTATAATT	6827
10	ATAACACAC TGCTAGCGAC CAACTGCTTG TCGAGAATGC CGCCGGGCAC CGGGTCGCTA	6887
	TTTCCACTTA CACCACTAGC CTGGGTGCTG GTCCCGTCTC CATTCTGCG GTTGCCGTT	6947
15	TAGCCCCCA CTCTGCGCTA GCATTGCTTG AGGATAACCTT GGACTACCCCT GCCCGCGCCC	7007
	ATACTTTGA TGATTTCTGC CCAGAGTGCC GCCCCCTTGG CCTTCAGGGC TGCGCTTCC	7067
	AGTCTACTGT CGCTGAGCTT CAGCGCCTTA AGATGAAGGT GGGTAAAACG CGGGAGTTGT	7127
20	AG TTTATTTGCT TGTCCCCCCC TTCTTCTGT TGCTTATTTC TCATTCTGC	7179
	GTTCCCGCGCT CCCTGA	7195
	a fourth sequence (SEQ ID NO.10):	
25	GCCATGGAGG CCCACCAGTT CATTAAGGCT CCTGGCATCA CTACTGCTAT TGAGCAAGCA	60
	GCTCTAGCAG CGGCCAACTC CGCCCTTGC GATGCTGTGG TGGTCCGGCC TTTCCCTTCC	120
30	CATCAGCAGG TTGAGATCCT TATAATCTC ATGCAACCTC GGCAGCTGGT GTTTCGTCC	180
	GAGGTTTTTT GGAATCACCC GATTCAACGT GTTATACATA ATGAGCTTGA GCAGTATTGC	240
	CGTGCTCGCT CGGGTCGCTG CCTTGAGATT GGAGCCCACC CACGCTCCAT TAATGATAAT	300
35	CCTAATGTCC TCCATCGCTG CTTTCTCCAC CCCGTGGCC GGGATGTTCA GCGCTGGTAC	360
	ACAGCCCCGA CTAGGGGACC TGCAGCGAAC TGTGCGCGCT CGGCACCTCG TGGTCTGCCA	420
40	CCAGCCGACC GCACTTACTG TTTGATGGC TTTGCCGGCT GCCGTTTGC CGCCGAGACT	480
	GGTGTGGCTC TCTATTCTCT CCATGACTTG CAGCCGGCTG ATGTTGCCGA GGCGATGGCT	540
	CGCCACGGCA TGACCCGCCT TTATGCAGCT TTCCACTTGC CTCCAGAGGT GCTCTGCCT	600
45	CCTGGCACCT ACCGGACATC ATCCTACTTG CTGATCCACG ATGGTAAGCG CGCGGTTGTC	660
	ACTTATGAGG GTGACACTAG CGCCGGTTAC AATCATGATG TTGCCACCCCT CCGCACATGG	720
50	ATCAGGACAA CTAAGGTTGT GGGTGAACAC CCTTTGGTGA TCGAGCGGGT GCGGGGTATT	780
	GGCTGTCACT TTGTGTTGTT GATCACTGCG GCCCCTGAGC CCTCCCCGAT GCCCTACGTT	840
	CCTTACCCGC GTTCGACGGA GGTCTATGTC CGGTCTATCT TTGGGCCGG CGGGTCCCCG	900
55	TCGCTGTTCC CGACCGCTTG TGCTGTCAAG TCCACTTTTC ACGCCGTCCC CACGCACATC	960

	TGGGACCGTC	TCATGCTCTT	TGGGGCCACC	CTCGACGACC	AGGCCTTTG	CTGCTCCAGG	1020
	CTTATGACGT	ACCTTCGTGG	CATTAGCTAT	AAGGTAAC TG	TGGGTGCCCT	GGTCGCTAAT	1080
5	GAAGGCTGGA	ATGCCACCGA	GGATGCGCTC	ACTGCAGTTA	TTACGGCGGC	TTACCTCACA	1140
	ATATGTCATC	AGCGTTATTT	GCGGACCCAG	GCGATTCTA	AGGGCATGCG	CCGGCTTGAG	1200
10	CTTGAACATG	CTCAGAAATT	TATTCACGC	CTCTACAGCT	GGCTATTGTA	GAAGTCAGGT	1260
	CGTGATTACA	TCCCAGGCCG	CCAGCTGCAG	TTCTACGCTC	AGTGCCGCCG	CTGGTTATCT	1320
	GCCGGGTTCC	ATCTGACCC	CCGCACCTTA	GTTTTGATG	AGTCAGTGCC	TTGTAGCTGC	1380
15	CGAACCACCA	TCCGGCGGAT	CGCTGGAAAA	TTTTGCTGTT	TTATGAAGTG	GCTCGGTCAG	1440
	GAGTGTTCCT	TTTCCTCCA	GCCCCGCCAG	GGGCTGGCGG	GCGACCAAGG	TCATGACAAT	1500
	GAGGCCTATG	AAGGCTCTGA	TGTTGATACT	GCTGAGCCTG	CCACCCCTAGA	CATTACAGGC	1560
20	TCATACATCG	TGGATGGTCG	GTCTCTGAA	ACTGTCTATC	AAGCTCTCGA	CCTGCCAGCT	1620
	GACCTGGTAG	CTCGCGCAGC	CCGACTGTCT	GCTACAGTTA	CTGTTACTGA	AACCTCTGGC	1680
25	CGTCTGGATT	GCCAAACAAT	GATCGGCAAT	AAGACTTTTC	TCACTACCTT	TGTTGATGGG	1740
	GCACGCCCTG	AGGTTAACCG	GCCTGAGCAG	CTTAACCTCT	CTTTTGACAG	CCAGCAGTGT	1800
	AGTATGGCAG	CCGGCCCGTT	TTGCCTCACC	TATGCTGCCG	TAGATGGCGG	GCTGGAAGTT	1860
30	CATTTTCCA	CCGCTGGCCT	CGAGAGCCGT	GTTGTTTCC	CCCCTGGTAA	TGCCCCGACT	1920
	GCCCCGCCGA	GTGAGGTCAC	CGCCTCTGC	TCAGCTCTT	ATAGGCACAA	CCGGCAGAGC	1980
35	CAGCGCCAGT	CGGTTATTGG	TAGTTGTGG	CTGCACCTG	AAGGTTGCT	CGGCCTGTC	2040
	CCGCCCTTT	CACCCGGGCA	TGAGTGGCGG	TCTGCTAAC	CATTTGCCG	CGAGAGCACG	2100
	CTCTACACCC	GCACTTGGTC	CACAATTACA	GACACACCT	TAACTGTCGG	GCTAATTTC	2160
40	GGTCATTGG	ATGCTGCTCC	CCACTCGGGG	GGGCCACCTG	CTACTGCCAC	AGGCCCTGCT	2220
	GTAAGGCTCGT	CTGACTCTCC	AGACCCCTGAC	CCGCTACCTG	ATGTTACAGA	TGGCTCACGC	2280
45	CCCTCTGGGG	CCCGTCCGGC	TGGCCCCAAC	CCGAATGGCG	TTCCGCAGCG	CCGCTTACTA	2340
	CACACCTACC	CTGACGGCGC	TAAGATCTAT	GTCGGCTCCA	TTTCGAGTC	TGAGTGCACC	2400
	TGGCTTGTCA	ACGCATCTAA	CGCCGGCCAC	CGCCCTGGTG	GGGGGCTTTG	TCATGCTTT	2460
50	TTTCAGCGTT	ACCCCTGATTC	GTTTGACGCC	ACCAAGTTG	TGATGCGTGA	TGGCTTTGCC	2520
	GCGTATAACCC	TTACACCCCG	GCCGATCATT	CATGCCGTGG	CCCCGGACTA	TCGATTGGAA	2580
55	CATAACCCCA	AGAGGCTCGA	GGCTGCCTAC	CGCGAGACTT	GCGCCCGCCG	AGGCACTGCT	2640

	GCCTATCCAC TCTTAGGCCG TGGCATTAC CAGGTGCCTG TTAGTTGAG TTTTGATGCC	2700
	TGGGAGCGGA ACCACCGCCC GTTGACGAG CTTTACCTAA CAGAGCTGGC GGCTCGGTGG	2760
5	TTTGAATCCA ACCGCCCCGG TCAGCCCACG TTGAACATAA CTGAGGATAC CGCCCGTGC	2820
	GCCAACCTGG CCCTGGAGCT TGACTCCGGG AGTGAAGTAG GCCGCGCATG TGCCGGGTGT	2880
	AAAGTCGAGC CTGGCGTTGT GCGGTATCAG TTTACAGCCG GTGTCCCCGG CTCTGGCAAG	2940
10	TCAAAGTCG TGCAACAGGC GGATGTGGAT GTTGTGTTG TGCCCACTCG CGAGCTTCGG	3000
	AACGCTTGGC GGCGCCGGGG CTTTGC GGCA TTCACTCCGC ACACTGC GGCC CGGTGTC	3060
15	AGCGGCCGTA GGGTTGTCAT TGATGAGGCC CCTTCGCTCC CCCCACACTT GCTGCTTTA	3120
	CATATGCAGC GTGCTGCATC TGTGCACCTC CTTGGGGACC CGAACATCAGAT CCCCCGCCATA	3180
	GATTTGAGC ACACCGGTCT GATTCCAGCA ATACGGCCGG AGTTGGTCCC GACTTCATGG	3240
20	TGGCATGTCA CCCACCGTTG CCCTGCAGAT GTCTGTGAGT TAGTCCGTGG TGCTTACCT	3300
	AAAATCCAGA CTACAAGTAA GGTGCTCCGT TCCCTTTCT GGGGAGAGCC AGCTGTCGGC	3360
25	CAGAAGCTAG TGTTCACACA GGCTGCTAAG GCCGCGCACC CGGGATCTAT AACGGTCCAT	3420
	GAGGCCAGG GTGCCACTT TACCACTACA ACTATAATTG CAACTGCAGA TGCCCGTGGC	3480
	CTCATACAGT CCTCCCGGGC TCACGCTATA GTTGCCTCA CTAGGCATAC TGAAAATGT	3540
30	GTTATACTTG ACTCTCCCGG CCTGTTGCGT GAGGTGGGTA TCTCAGATGC CATTGTTAAT	3600
	AATTTCTCC TTTCGGGTGG CGAGGTTGGT CACCAAGAGAC CATCGGTCA TCCCGCAGGC	3660
35	AACCTGACC GCAATGTTGA CGTGCTTGCG GCGTTCCAC CTTCATGCCA AATAAGCGCC	3720
	TTCCATCAGC TTGCTGAGGA GCTGGGCCAC CGGCCGGCGC CGGTGGCGGC TGTGCTACCT	3780
	CCCTGCCCTG AGCTTGAGCA GGGCCTCTC TATCTGCCAC AGGAGCTAGC CTCCGTGAC	3840
40	AGTGTGTGA CATTGAGCT AACTGACATT GTGCACTGCC GCATGGCGGC CCCTAGCCAA	3900
	AGGAAAGCTG TTTGTCCAC GCTGGTAGGC CGGTATGGCA GACGCACAAG GCTTTATGAT	3960
45	GCGGGTCACA CCGATGTCCG CGCCTCCCTT GCGCGCTTTA TTCCCACTCT CGGGCGGGTT	4020
	ACTGCCACCA CCTGTGAAC TTTGAGCTT GTAGAGGCAGA TGGTGGAGAA GGGCCAAGAC	4080
	GGTTCAGCCG TCCTCGAGTT GGATTTGTGC AGCCGAGATG TCTCCCGCAT AACCTTTTC	4140
50	CAGAAGGATT GTAACAAGTT CACGACCGGC GAGACAATTG CGCATGGCAA AGTCGGTCAG	4200
	GGTATCTTCC GCTGGAGTAA GACGTTTGT GCCCTGTTG GCCCCTGGTT CCGTGGCGATT	4260
55	GAGAAGGCTA TTCTATCCCT TTTACCACAA GCTGTGTTCT ACGGGGATGC TTATGACGAC	4320

	TCAGTATTCT CTGCTGCCGT GGCTGGCGCC AGCCATGCCA TGGTGTGTTGA AAATGATTT	4380
	TCTGAGTTG ACTCGACTCA GAATAACTTT TCCCTAGGTC TTGAGTGCAC CATTATGGAA	4440
5	GAGTGTGGTA TGCCCCAGTG GCTTGTCAAGG TTGTACCATG CCGTCCGGTC GGCGTGGATC	4500
	CTGCAGGCC CAAAAGAGTC TTTGAGAGGG TTCTGGAAGA AGCATTCTGG TGAGCCGGC	4560
10	AGCTTGCTCT GGAATACGGT GTGGAACATG GCAATCATTG CCCATTGCTA TGAGTTCCGG	4620
	GACCTCCAGG TTGCCGCCTT CAAGGGCGAC GACTCGGTG TCCTCTGTAG TGAATACCGC	4680
	CAGAGCCAG GCGCCGGTTC GCTTATAGCA GGCTGTGGTT TGAAGTTGAA GGCTGACTTC	4740
15	CGGCCGATTG GGCTGTATGC CGGGGTTGTC GTCGCCCCGG GGCTCGGGGC CCTACCCGAT	4800
	GTCGTTCGAT TCGCCGGACG GCTTCGGAG AAGAACTGGG GGCTGTATCC GGAGCCGGCA	4860
	GAGCAGCTCC GCCTCGCCGT GCAGGATTTC CTCCGTAGGT TAACGAATGT GGCCCAGATT	4920
20	TGTGTTGAGG TGGTGTCTAG AGTTTACGGG GTTTCCCCGG GTCTGGTTCA TAACCTGATA	4980
	GGCATGCTCC AGACTATTGG TGATGGTAAG GCGCATTAA CAGAGTCTGT TAAGCCTATA	5040
25	CTTGACCTTA CACACTCAAT TATGCACCGG TCTGAATGAA TAACATGTGG TTTGCTGCC	5100
	CCATGGGTTG GCCACCATGC GCCCTAGGCC TCTTTGCTG TTGTTCTCT TGTTCTGCC	5160
30	TATGTTGCC GCGCCACCGA CCGGTAGCC GTCTGGCCGC CGTCGTGGGC GGCGCAGCGG	5220
	CGGTACCGGC GGTGGTTCT GGGGTGACCG GGTTGATTCT CAGCCCTTCG CAATCCCCTA	5280
	TATTGATCCA ACCAACCCCT TTGCCCCAGA CGTTGCCGCT GCGTCCGGGT CTGGACCTCG	5340
35	CCTTCGCCAA CCAGCCCGC CACTTGGCTC CACTTGGCGA GATCAGGCC AGCGCCCCTC	5400
	CGCTGCCCTCC CGTCGCCGAC CTGCCACAGC CGGGGCTGCG GCGCTGACGG CTGTGGCGCC	5460
	TGCCCATGAC ACCTCACCCG TCCCGGACGT TGATTCTCGC GGTGCAATTAC TACGCCGCCA	5520
40	GTATAATTG TCTACTTCAC CCCTGACATC CTCTGTGGCC TCTGGCACTA ATTTAGTCCT	5580
	GTATGCAGCC CCCCTTAATC CGCCTCTGCC GCTGCAGGAC GGTACTAATA CTCACATTAT	5640
	GGCCACAGAG GCCTCCAATT ATGCACAGTA CGGGGTTGCC CGCGCTACTA TCCGTTACCG	5700
45	GCCCCTAGTG CCTAATGCAG TTGGAGGCTA TGCTATATCC ATTTCTTCT GGCTCAAAC	5760
	AACCACAAACC CCTACATCTG TTGACATGAA TTCCATTACT TCCACTGATG TCAGGATTCT	5820
50	TGTTCAACCT GGCATAGCAT CTGAATTGGT CATCCCAAGC GAGCGCCTTC ACTACCGCAA	5880
	TCAAGGTTGG CGCTCGGTTG AGACATCTGG TGTTGCTGAG GAGGAAGCCA CCTCCGGTCT	5940
55	TGTGATGTTA TGCATACATG GCTCTCCAGT TAACCTCTAT ACCAATACCC CTTATACCGG	6000

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	5	TGCCCTGGC TTACTGGACT TTGCCTTAGA GCTTGAGTT CGCAATCTCA CCACCTGTAA	6060
		CACCAATACA CGTGTGTCGGT CTTACTCCAG CACTGCTCGT CACTCCGCC GAGGGGCCGA	6120
	10	CGGGACTGCG GAGCTGACCA CAACTGCAGC CACCAAGGTTA ATGAAAGATC TCCACTTAC	6180
		CGGCCTTAAT GGGGTAGGTG AAGTCGGCCG CGGGATAGCT CTAACATTAC TTAACCTTGC	6240
		TGACACGCTC CTCGGCGGGC TCCCGACAGA ATTAATTTCG TCGGCTGGCG GGCAACTGTT	6300
	15	TTATTCCCGC CCGGTTGTCT CAGCCAATGG CGAGCCAACC GTGAAGCTCT ATACATCAGT	6360
		GGAGAATGCT CAGCAGGATA AGGGTGTG TATCCCCAC GATATCGATC TTGGTGATTG	6420
	20	GCGTGTGGTC ATTCAGGATT ATGACAACCA GCATGAGCAG GATCGGGCCA CCCCCTGCC	6480
		TGCGCCATCT CGGCCTTTT CTGTTCTCCG AGCAAATGAT GTACTTTGGC TGTCCTCAC	6540
	25	TGCAGCCGAG TATGACCAGT CCACTTACGG GTCGTCAACT GGCCGGTTT ATATCTCGGA	6600
		CAGCGTGAATG TTGGTGAATG TTGCGACTGG CGCGCAGGCC GTAGCCCGAT CGCTTGACTG	6660
		GTCCAAAGTC ACCCTCGACG GGCGGCCCCC CCCGACTGTT GAGCAATATT CCAAGACATT	6720
	30	CTTTGTGCTC CCCCTTCGTG GCAAGCTCTC CTTTGGGAG GCCGGCACAA CAAAGCAGG	6780
		TTATCCTTAT AATTATAATA CTACTGCTAG TGACCAGATT CTGATTGAAA ATGCTGCCGG	6840
		CCATCGGGTC GCCATTTCAA CCTATAACCAC CAGGCTTGGG GCCGGTCCGG TCGCCATTTC	6900
	35	TGCGGCCGCG GTTTGGCTC CACGCTCCGC CCTGGCTCTG CTGGAGGATA CTTTGATTA	6960
		TCCGGGGCGG GCGCACACAT TTGATGACTT CTGCCCTGAA TGCCCGCCT TAGGCCTCCA	7020
	40	GGGTTGTGCT TTCCAGTCAA CTGTCGCTGA GCTCCAGCAGC CTTAAAGTTA AGGTGGGTAA	7080
		AACTCGGGAG TTGTAGTTA TTTGGCTGTG CCCACCTACT TATATCTGCT GATTTCCTTT	7140
		ATTTCTTTT TCTCGGTCCC GCGCTCCCTG A	7171
	45	or a fifth sequence (SEQ ID NO. 12) :	
		CGGGCCCCGT ACAGGTACAA ACCTGTGAGT TGTACGAGCT AGTGGAGGCC ATGGTCGAGA	60
		AAGGCCAGGA TGGCTCCGCC GTCCTTGAGC TCGATCTCTG CAACCGTGAC GTGTCCAGGA	120
	50	TCACCTTTT CCAGAAAGAT TGCAATAAGT TCACCACGGG AGAGACCAC GCGCATGGTA	180
		AAGTGGGCCA GGGCATTTCG GCCTGGAGTA AGACCTCTG TGCCCTTTG GCGCCCTGGT	240
	55	TCCGTGCTAT TGAGAAGGCT ATTCTGGCCC TGCTCCCTCA GGGTGTGTTT TATGGGGATG	300
		CCTTTGATGA CACCGTCTTC TCGGCGCGTG TGGCCCGAGC AAAGGCGTCC ATGGTGTGTTG	360
		AGAATGACTT TTCTGAGTTT GACTCCACCC AGAATAATT TTCCCTGGC CTAGAGTGTG	420
		CTATTATGGA GAAGTGTGGG ATGCCGAAGT GGCTCATCCG CTTGTACCAAC CTTATAAGGT	480

5	CTGCGTGGAT CCTGCAGGCC CGGAAGGAGT CCCTGCAGG GTGTTGGAAG AAACACTCCG GTGAGCCCGG CACTCTTCTA TGGAATACTG TCTGGAACAT GGCGTTATC ACCCATTGTT ACGATTTCCG CGATTTGCAG GTGGCTGCCT TTAAAGGTGA TGATTCGATA GTGCTTGCA	540 600 660
	GTGAGTACCG TCAGAGTCCA GGGGCTGCTG TCCTGATTGC TGGCTGTGGC TTAAAGCTGA	720
10	AGGTGGGTTT CCGTCCGATT GGTTTGTATG CAGGTGTTGT GGTGACCCCC GGCCTTGGCG CGCTTCCCGA CGTCGTGCCT TTGTCCGGCC GGCTTACTGA GAAGAATTGG GGCCCTGGCC	780 840
	CTGAGCGGGC GGAGCAGCTC CGCCCTTGCTG TGCG	874

15 or a sequence complementary thereto.

4. A protein which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) derived from a viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZXF1(ET1.1) carried in E. coli strain BB4, and having ATCC Deposit Nno. 67717.

5. The protein of claim 4, which is encoded by a coding region within said 1.33 kb EcoRI insert.

30 6. A protein which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) encoded by genetic sequence 406.3-2 or 406.4-2 or a fragment thereof.

35 7. A method of detecting infection by
enterically transmitted nonA/nonB hepatitis viral
agent in a test individual, comprising:
40 providing a peptide antigen which is (a)
immunoreactive with antibodies present in individuals
infected with enterically transmitted nonA/nonB
hepatitis and (b) derived from a viral hepatitis agent
whose genome contains a region which is homologous to

the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717,

5 reacting serum from the test individual with such antigen, and

examining the antigen for the presence of bound antibody.

8. The method of claim 7, wherein the serum antibody is an IgM or IgG antibody, or a mixture of both, the antigen provided is attached to a support, said reacting includes contacting such serum with the support and said examining includes reacting the support and bound serum antibody with a reporter-labeled anti-human antibody.

9. A kit for ascertaining the presence of serum antibodies which are diagnostic of enterically transmitted nonA/nonB hepatitis infection, comprising

20 a support with surface-bound recombinant peptide antigen which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB viral hepatitis agent and (b) derived from a viral hepatitis agent 25 whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717, and

30 a reporter-labeled anti-human antibody.

10. A DNA fragment derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid 35 pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

11. The fragment of claim 10, which is derived from said 1.33 kb EcoRI insert.

12. A DNA molecule comprising genetic sequence 5 406.3-2 or 406.4-2 or a fragment thereof, wherein said fragment comprises at least 12 consecutive nucleotides.

13. A DNA fragment derived from an enterically 10 transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to a DNA fragment within a first sequence (SEQ ID NO.1):

	AGACCTGTCC CTGTTGCAGC TGTTCTACCA CCCTGCCCG AGCTCGAACCA GGGCCTTCTC	60
15	TACCTGCCCG AGGAGCTCAC CACCTGTGAT AGTGTGTAAC CATTGAAATT AACAGACATT	120
	GTGCACTGCC GCATGGCCGC CCCGAGCCAG CGCAAGGCCG TGCTGTCCAC ACTCGTGGGC	180
20	CGCTACGGCG GTCGCACAAA GCTCTACAAT GCTTCCACT CTGATGTTCG CGACTCTCTC	240
	GCCC GTTTA TCCCGGCCAT TGGCCCCATA CAGGTTACAA CTTGTGAATT GTACGAGCTA	300
	GTGGAGGCCA TGGTCGAGAA GGGCCAGGAT GGCTCCGCCG TCCTTGAGCT TGATCTTGC	360
25	AACCGTGACG TGTCCAGGAT CACCTCTTC CAGAAAGATT GTAACAAGTT CACCACAGGT	420
	GAGACCATTG CCCATGGTAA AGTGGGCCAG GGCATCTCGG CCTGGAGCAA GACCTCTGC	480
30	GCCCTCTTG GCCCTGGTT CCGCGCTATT GAGAAGGCTA TTCTGGCCCT GCTCCCTCAG	540
	GGTGTGTTT ACGGTGATGC CTTTGATGAC ACCGTCTTCT CGGGCGCTGT GGCCGCAGCA	600
	AAGGCATCCA TGGTGTGTTGA GAATGACTTT TCTGAGTTTG ACTCCACCCA GAATAACTTT	660
35	TCTCTGGGTC TAGAGTGTGC TATTATGGAG GAGTGTGGGA TGCCGCAGTG GCTCATCCGC	720
	CTGTATCACC TTATAAGGTC TGCGTGGATC TTGCAGGCC CGAAGGAGTC TCTGCGAGGG	780
40	TTTTGGAAGA AACACTCCGG TGAGCCCGC ACTCTTCTAT GGAATACTGT CTGGAATATG	840
	GCCGTTATTA CCCACTGTTA TGACTTCCGC GATTTTCAGG TGGCTGCCTT TAAAGGTGAT	900
	GATTGATAG TGCTTGCAG TGAGTATCGT CAGAGTCCAG GAGCTGCTGT CCTGATCGCC	960
45	GGCTGTGGCT TGAAGTTGAA GGTAGATTTC CGCCCGATCG GTTTGTATGC AGGTGTTGTG	1020
	GTGGCCCCCG GCCTTGGCGC GCTCCCTGAT GTTGTGCGCT TCGCCGGCCG GCTTACCGAG	1080
50	AAGAATTGGG GCCCTGGCCC TGAGCAGGGCG GAGCAGCTCC GCCTCGCTGT TAGTGTATTTC	1140

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97.

CTCCGCAAGC TCACGAATGT AGCTCAGATG TGTGTGGATG TTGTTTCCCG TGTTTATGGG 1200

GTTTCCCTG GACTCGTTCA TAACCTGATT GGCATGCTAC AGGCTGTTGC TGATGGCAAG 1260

5 GCACATTCAGT AAAACCAGTG CTCGA 1295

a second sequence (SEQ ID NO.5):

TCGAGCACTG GTTTACTGA CTCAGTAAA TGTCCTTGC CATCAGCAAC AGCCTGTAGC 60

10 ATGCCAATCA GGTTATGAAC GAGTCCAGGG GAAACCCCAT AAACACGGGA AACAACATCC 120

ACACACATCT GAGCTACATT CGTGAGCTTG CGGAGGAAAT CACTAACAGC GAGGCGGAGC 180

15 TGCTCCGCC GCTCAGGGCC AGGGCCCAA TTCTTCTCGG TAAGCCGGCC GGCGAAGCGC 240

ACAACATCAG GGAGCGCGCC AAGGCCGGGG GCCACCACAA CACCTGCATA CAAACCGATC 300

GGGCGGAAAT CTACCTTCAA CTTCAAGCCA CAGCCGGCGA TCAGGACAGC AGCTCCTGGA 360

20 CTCTGACGAT ACTCACTGCA AAGCACTATC GAATCATCAC CTTAAAGGC AGCCACCTGA 420

AAATCGCGGA AGTCATAACA GTGGGTAAATA ACGGCCATAT TCCAGACAGT ATTCCATAGA 480

25 AGAGTCCCGG GCTCACCGGA GTGTTCTTC CAAAACCTC GCAGAGACTC CTTGGGGCC 540

TGCAAGATCC ACGCAGACCT TATAAGGTGA TACAGGCGGA TGAGCCACTG CGGCATCCCA 600

CACTCCTCCA TAATAGCACA CTCTAGACCC AGAGAAAAGT TATTCTGGGT GGAGTCAAAC 660

30 TCAGAAAAGT CATTCTAAA CACCATGGAT GCCTTGCTG CGGCCACAGC CGCCGAGAAG 720

ACGGTGTCA CAAAGGCATC ACCGTAAAAC ACACCCCTGAG GGAGCAGGGC CAGAATAGCC 780

35 TTCTCAATAG CGCGGAACCA AGGGCCAAAG AGGGCGCAGA AGGTCTTGCT CCAGGCCGAG 840

ATGCCCTGGC CCACCTTACC ATGGCAATG GTCTCACCTG TGGTGAACCT GTTACAATCT 900

TTCTGGAAGA AGGTGATCCT GGACACGTCA CGGTTGCAA GATCAAGCTC AAGGACGGCG 960

40 GAGCCATCCT GGCCCTCTC GACCATGGCC TCCACTAGCT CGTACAATTG ACAAGTTGTA 1020

ACCTGTACGG GGCAATGGC CGGGATAAAA CGGGCGAGAG AGTCGCGAAC ATCAGAGTGG 1080

45 GAAGCATTGT AGAGCTTGT GCGACCGCCG TAGCGGCCA CGAGTGTGGA CAGCACGGCC 1140

TTGCGCTGGC TCGGGGCGGC CATGCGCGAG TGCAACATGT CTGTTAATTG AAATGTTACG 1200

ACACTATCAC AGGTGGTGAG CTCCTGGGGC AGGTAGAGAA GGCCCTGTTG GAGCTCGGGG 1260

50 CAGGGTGGTA GAACAGCTGC AACAGGGACA GGTCT 1295

a third sequence (SEQ ID NO.6):

AGGCAGACCA CATATGTGGT CGATGCC ATGGAGGCC ATCAGTTAT TAAGGCTCCT 57

55 GGCATCACTA CTGCTATTGA GCAGGCTGCT CTAGCAGCGG CCAACTCTGC CCTGGCGAAT 117

	GCTGTGGTAG TTAGGCCTT TCTCTCTAC CAGCAGATTG AGATCCTCAT TAACCTAATG	177
5	CAACCTCGCC AGCTTGTCTT CCGCCCCGAG GTTTTCTGGA ATCATCCAT CCAGCGTGTC	237
	ATCCATAACG AGCTGGAGCT TTACTGCCGC GCCCGCTCCG GCCGCTGTCT TGAAATTGGC	297
	GCCCCATCCCC GCTCAATAAA TGATAATCCT AATGTGGTCC ACCGCTGCTT CCTCCGCCCT	357
10	GTTGGGCGTG ATGTTCAGCG CTGGTATACT GCTCCCACTC GCGGGCCGGC TGCTAATTGC	417
	CGGGCGTTCGG CGCTGCGCGG GCTTCCCGCT GCTGACCGCA CTTACTGCCT CGACGGGTTT	477
	TCTGGCTGTA ACTTTCCCGC CGAGACTGGC ATCGCCCTCT ACTCCCTTCA TGATATGTCA	537
15	CCATCTGATG TCGCCGAGGC CATGTTCCGC CATGGTATGA CGCGGCTCTA TGCCGCCCTC	597
	CATCTTCCGC CTGAGGTCCT GCTGCCCTT GGCACATATC GCACCGCATC GTATTGCTA	657
20	ATTCATGACG GTAGGGCGGT TGTGGTGACG TATGAGGGTG ATACTAGTGC TGGTTACAAC	717
	CACGATGTCT CCAACTTGCG CTCTGGATT AGAACCCACCA AGGTTACCGG AGACCATCCC	777
25	CTCGTTATCG AGCGGGTTAG GGCCATTGGC TGCCACTTTG TTCTCTTGCT CACGGCAGCC	837
	CCGGAGCCAT CACCTATGCC TTATGTTCCCT TACCCCCGGT CTACCGAGGT CTATGTCCGA	897
	TCGATCTTCG GCCCGGGTGG CACCCCTTCC TTATTCCAA CCTCATGCTC CACTAAGTCG	957
30	ACCTTCCATG CTGTCCCTGC CCATATTTGG GACCGTCTTA TGCTGTTCGG GGCCACCTTG	1017
	GATGACCAAG CCTTTTGCTG CTCCCGTTA ATGACCTACC TTGCGGGCAT TAGCTACAAG	1077
	GTCACTGTTG GTACCCCTGT GGCTAATGAA GGCTGGAATG CCTCTGAGGA CGCCCTCACA	1137
35	GCTGTTATCA CTGCCGCTA CCTTACCAATT TGCCACCAGC GGTATCTCCG CACCCAGGCT	1197
	ATATCCAAGG GGATGCGTCTG TCTGGAACGG GAGCATGCC AGAAGTTTAT AACACGCCTC	1257
40	TACAGCTGGC TCTTCGAGAA GTCCGGCCGT GATTACATCC CTGGCCGTCA GTTGGAGTTC	1317
	TACGCCCACT GCAGGGCGCTG GCTCTCCGCC GGCTTCATC TTGATCCACG GGTGTTGGTT	1377
	TTTGACGAGT CGGCCCCCTG CCATTGTAGG ACCGCGATCC GTAAGGCCTCT CCAAAGTTT	1437
45	TGCTGCTTCA TGAAGTGGCT TGGTCAGGAG TGCACCTGCT TCCTTCAGCC TGCAGAAGGC	1497
	GCCGTCGGCG ACCAGGGTCA TGATAATGAA GCCTATGAGG GGTCCGATGT TGACCCGTCT	1557
50	GAGTCCGCCA TTAGTGACAT ATCTGGTCC TATGTGTCC CTGGCACTGC CCTCCAACCG	1617
	CTCTACCAAGG CCCTCGATCT CCCCCGTGAG ATTGTGGCTC GCGCGGGCCG GCTGACCGCC	1677
	ACAGTAAAGG TCTCCCAGGT CGATGGGCAGG ATCGATTGCG AGACCCCTCT TGGAACAAA	1737
55	ACCTTTCGCA CGTCGTTCGT TGACGGGGCG GTCTTAGAGA CCAATGGGCC AGAGCGCCAC	1797

	AATCTCTCCT TCGATGCCAG TCAGAGCACT ATGGCCGCTG GCCCTTCAG TCTCACCTAT	1857
5	GCCGCCTCTG CAGCTGGCT GGAGGTGCGC TATGTTGCTG CCGGGCTTGA CCATGGGCG	1917
	GTTTTGCC CCGGTGTTTC ACCCCGGTCA GCCCCCAGCG AGGTTACCGC CTTCTGCTCT	1977
	GCCCTATACA GGTTAACCG TGAGGCCAG CGCCATTGCG TGATGGTAA CTTATGGTTC	2037
10	CATCCTGAGG GACTCATTGG CCTCTTCGCC CCGTTTCGC CCGGGCATGT TTGGGAGTCG	2097
	GCTAATCCAT TCTGTGGCGA GAGCACACTT TACACCCGTA CTTGGTCGGA GGTTGATGCC	2157
15	GTCTCTAGTC CAGCCGGCC TGACTTAGGT TTTATGTCTG AGCCTCTAT ACCTAGTAGG	2217
	GCCGCCACGC CTACCCCTGGC GGCCCTCTA CCCCCCCTG CACGGACCC TTCCCCCCT	2277
	CCCTCTGCC CCGCGCTTGC TGAGCCGGCT TCTGGCGCTA CCGCCGGGGC CCCGGCCATA	2337
20	ACTCACCAAGA CGGCCGGCA CGGCCGCCTG CTCTTCACCT ACCCGGATGG CTCTAAGGTA	2397
	TTCGCCGGCT CGCTGTTGCA GTGCACATGC ACGTGGCTCG TTAACGCGTC TAATGTTGAC	2457
25	CACCGCCCTG GCGCGGGCT TTGCATGCA TTTTACCAAA GGTACCCCGC CTCCCTTGAT	2517
	GCTGCCTCTT TTGTGATGCG CGACGGCGCG GCCGCGTACA CACTAACCCC CGGGCCAATA	2577
	ATTCACGCTG TCGCCCCCTGA TTATAGGTTG AACATAACC CAAAGAGGCT TGAGGCTGCT	2637
30	TATCGGGAAA CTTGCTCCCG CCTCGGCACC GCTGCATACC CGCTCCTCGG GACCGGCATA	2697
	TACCAAGGTGC CGATCGGCC CGAGTTTGAC GCCTGGGAGC GGAACCACCG CCCCCGGGAT	2757
35	GAGTTGTACC TTCTGAGCT TGCTGCCAGA TGTTTGAGG CCAATAGGCC GACCCGGCCG	2817
	ACTCTCACTA TAACTGAGGA TGTTGCACGG ACAGCGAATC TGGCCATCGA GCTTGACTCA	2877
	GCCACAGATG TCGGCCGGC CTGTGCCGGC TGCGGGCTA CCCCCGGCGT TGTTCACTAC	2937
40	CAGTTTACTG CAGGTGTGCC TGGATCCGGC AAGTCCCGCT CTATCACCCA AGCCGATGTG	2997
	GACGTTGTCG TGGTCCCGAC GCGTGAGTTG CGTAATGCCT GGCGCCGTC CGGCTTGCT	3057
45	GCTTTTACCC CGCATACTGC CGCCAGAGTC ACCCAGGGGC GCGGGTTGT CATTGATGAG	3117
	GCTCCATCCC TCCCCCTCA CCTGCTGCTG CTCCACATGC AGCGGGCCGC CACCGTCCAC	3177
	CTTCTTGGCG ACCCGAACCA GATCCCAGCC ATCGACTTTG AGCACGCTGG GCTCGTCCCC	3237
50	GCCATCAGGC CCGACTTAGG CCCACCTCC TGGTGGCATG TTACCCATCG CTGGCCTGCG	3297
	GATGTATGCG AGCTCATCCG TGGTGCATAC CCCATGATCC AGACCACTAG CGGGTTCTC	3357
55	CGTTCGTTGT TCTGGGGTGA GCCTGCCGTC GGGCAGAAC TAGTGTTCAC CCAGGGCGCC	3417
	AAGCCCGCCA ACCCCGGCTC AGTACGGTC CACGAGGCAGC AGGGCGCTAC CTACACGGAG	3477

	ACCACTATTA TTGCCACAGC AGATGCCCGG GGCTTATT AGTCGTCTG GGCTCATGCC	3537
5	ATTGTTGCTC TGACGCGCCA CACTGAGAAG TGCAGTCATCA TTGACGCACC AGGCCTGCTT	3597
	CGCGAGGTGG GCATCTCCGA TGCAATCGTT AATAACTTT TCCTCGCTGG TGGCGAAATT	3657
	GGTCACCAGC GCCCATCAGT TATTCCCCGT GGCAACCTG ACGCCAATGT TGACACCCCTG	3717
10	GCTGCCTTCC CGCCGTCTTG CCAGATTAGT GCCTTCCATC AGTTGGCTGA GGAGCTTGGC	3777
	CACAGACCTG TCCCTGTTGC AGCTGTTCTA CCACCCGTGCC CCGAGCTCGA ACAGGGCCTT	3837
15	CTCTACCTGC CCCAGGAGCT CACCACTGT GATAGTGTGTAACATTGA ATTAACAGAC	3897
	ATTGTGCACT GCCGCATGGC CGCCCCGAGC CAGCGCAAGG CCGTGTGTC CACACTCGTG	3957
	GGCCGCTACG GCGGTCGCAC AAAGCTCTAC AATGCTTCCC ACTCTGATGT TCGCGACTCT	4017
20	CTCGCCCGTT TTATCCCGGC CATTGGCCCC GTACAGGTTA CAACTTGTGA ATTGTACGAG	4077
	CTAGTGGAGG CCATGGTCGA GAAGGGCCAG GATGGCTCCG CCGTCCTTGA GCTTGATCTT	4137
25	TGCAACCGTG ACGTGTCCAG GATCACCTTC TTCCAGAAAG ATTGTAACAA GTTCACCACA	4197
	GGTGAGACCA TTGCCATGG TAAAGTGGGC CAGGGCATCT CGGCCTGGAG CAAGACCTTC	4257
	TGCGCCCTCT TTGGCCCTTG GTTCCGCGCT ATTGAGAAGG CTATTCTGGC CCTGCTCCCT	4317
30	CAGGGTGTGT TTTACGGTGA TGCTTTGAT GACACCGTCT TCTCGGCGGC TGTGGCCGCA	4377
	GCAAAGGCAT CCATGGTGT TGAGAATGAC TTTTCTGAGT TTGACTCCAC CCAGAATAAC	4437
35	TTTTCTCTGG GTCTAGAGTG TGCTATTATG GAGGAGTGTG GGATGCCGCA GTGGCTCATC	4497
	CGCCTGTATC ACCTTATAAG GTCTCGTGG ATCTTGCAGG CCCCAGAAGGA GTCTCTGCGA	4557
	GGGTTTTGGA AGAAACACTC CGGTGAGCCC GGCACCTCTTC TATGGAATAC TGTCTGGAAT	4617
40	ATGGCCGTTA TTACCCACTG TTATGACTTC CGCGATTTTC AGGTGGCTGC CTTTAAAGGT	4677
	GATGATTGCA TAGTGCTTTG CAGTGAGTAT CGTCAGAGTC CAGGAGCTGC TGTCCCTGATC	4737
45	GCCGGCTGTG GCTTGAAGTT GAAGGTAGAT TTCCGCCGA TCGGTTGTA TGCAGGTGTT	4797
	GTGGTGGCCC CCGGCCTTGG CGCGCTCCCT GATGTTGTGC GCTTCGCCGG CGGGCTTACC	4857
	GAGAAGAATT GGGGCCCTGG CCCTGAGCGG GCGGAGCAGC TCCGCCTCGC TGTTAGTGAT	4917
50	TTCCCTCGCA AGCTCACGAA TGTAGCTCAG ATGTGTGTGG ATGTTGTTTC CGGTGTTTAT	4977
	GGGGTTTCCC CTGGACTCGT TCATAACCTG ATTGGCATGC TACAGGCTGT TGCTGATGGC	5037
55	AAGGCACATT TCACTGAGTC AGTAAAACCA GTGCTCGACT TGACAAATTCAATCTGTGT	5097
	CGGGTGGAAT GA ATAACATGTC TTTGCTGCG CCCATGGGTT CGCGACCATG	5149

	CGCCCTCGC CTATTTGTT GCTGCTCCTC ATGTTTTGC CTATGCTGCC CGCGCCACCG	5209
5	CCCGGTCAGC CGTCTGGCCG CGTCGTGGG CGGCGCAGCG GCGGTTCCGG CGGTGGTTTC	5269
	TGGGGTGACC GGGTTGATTC TCAGCCCTTC GCAATCCCCT ATATTCATCC AACCAACCCC	5329
	TTCGCCCCCG ATGTCACCGC TGCGGCCGGG GCTGGACCTC GTGTCGCCA ACCCGCCCGA	5389
10	CCACTCGGCT CCGCTTGGCG TGACCAGGCC CAGCGCCCCG CCGTTGCCTC ACGTCGTAGA	5449
	CCTACACACAG CTGGGGCCGC GCCGCTAA CGCGGTCCG TCCGGCCCAT GACACCCCGC	5507
15	CAGTGCCTGA TGTCGACTCC CGCGGCGCCA TCTTGCGCCG GCAGTATAAC CTATCAACAT	5567
	CTCCCCCTTAC CTCTTCCGTG GCCACCGGCA CTAACCTGGT TCTTATGCC GCCCCCTTTA	5627
	GTCCGCTTTT ACCCCTTCAG GACGGCACCA ATACCCATAT AATGGCCACG GAAGCTTCTA	5687
20	ATTATGCCCA GTACCGGGTT GCCCGTGCCA CAATCCGTTA CCGCCCGCTG GTCCCCAATG	5747
	CTGTCGGCGG TTACGCCATC TCCATCTCAT TCTGGCCACA GACCACCAAC ACCCCGACGT	5807
25	CCGTTGATAT GAATTCAATA ACCTCGACGG ATGTTCGTAT TTTAGTCCAG CCCGGCATAG	5867
	CCTCTGAGCT TGTGATCCCAGT GAGCGGCC TACACTATCG TAACCAAGGC TGGCGCTCCG	5927
	TCGAGACCTC TGGGGTGGCT GAGGAGGAGG CTACCTCTGG TCTTGTATG CTTTGATAC	5987
30	ATGGCTCACT CGTAAATTCC TATACTAATA CACCCCTATAC CGGTGCCCTC GGGCTGTTGG	6047
	ACTTTGCCCT TGAGCTTGAG TTTCGCAACC TTACCCCCGG TAACACCAAT ACGCGGGTCT	6107
35	CCCGTTATTC CAGCACTGCT CGCCACCGCC TTGTCGCCGG TGCGGACGGG ACTGCCGAGC	6167
	TCACCAACAC GGCTGCTACC CGCTTATGA AGGACCTCTA TTTTACTAGT ACTAATGGTG	6227
	TCGGTGAGAT CGGCCGCCGGG ATAGCCCTCA CCCTGTTCAA CCTTGCTGAC ACTCTGCTTG	6287
40	GC GGCCCTGCC GACAGAATTG ATTCGTCGG CTGGTGGCCA GCTGTTCTAC TCCCGTCCCG	6347
	TTGTCTCAGC CAATGGCGAG CCGACTGTTA AGTTGTATAC ATCTGTAGAG AATGCTCAGC	6407
45	AGGATAAGGG TATTGCAATC CCGCATGACA TTGACCTCGG AGAATCTCGT GTGGTTATTC	6467
	AGGATTATGA TAACCAACAT GAACAAGATC GGCGACGCC TTCTCCAGCC CCATCGCGCC	6527
	CTTTCTCTGT CCTTCGAGCT AATGATGTGC TTTGGCTCTC TCTCACCGCT GCCGAGTATG	6587
50	ACCAGTCCAC TTATGGCTCT TCGACTGGCC CAGTTTATGT TTCTGACTCT GTGACCTTGG	6647
	TTAATGTTGC GACCGGGCGCG CAGGCCGTTG CCCGGTCGCT CGATTGGACC AAGGTACAC	6707
55	TTGACGGTCG CCCCCCTCTCC ACCATCCAGC AGTACTCGAA GACCTTCTTT GTCCCTGCCGC	6767
	TCCGCGGTAA GCTCTTTTC TGGGAGGCAG GCACAACTAA AGCCGGGTAC CCTTATAATT	6827

	ATAAACACCAC TGCTAGCGAC CAACTGCTTG TCGAGAAATGC CGCCGGGCAC CGGGTCGCTA	6887
5	TTTCCACTTA CACCACTAGC CTGGGTGCTG GTCCCGTCTC CATTCTGCG GTTGCCGTTT	6947
	TAGCCCCCCA CTCTGCCTA GCATTGCTTG AGGATAACCTT GGACTACCCCT GCCCGCGCCC	7007
10	ATACTTTGA TGATTTCTGC CCAGAGTGCC GCCCCCTTGG CCTTCAGGGC TGCGCTTCC	7067
	AGTCTACTGT CGCTGAGCTT CAGCGCCTTA AGATGAAGGT GGGTAAAAGT CGGGAGTTGT	7127
	AG TTTATTTGCT TGTGCCCGCC TTCTTTCTGT TGCTTATTTC TCATTTCTGC	7179
15	GTTCGGCGCT CCCTGA	7195
	a fourth sequence (SEQ ID NO.10):	
	GCCATGGAGG CCCACCAGTT CATTAAGGCT CCTGGCATCA CTACTGCTAT TGAGCAAGCA	60
20	GCTCTAGCAG CGGCCAACTC CGCCCTTGCG AATGCTGTGG TGGTCCGGCC TTTCTTTCC	120
	CATCAGCAGG TTGAGATCCT TATAAATCTC ATGCAACCTC GGCAAGCTGGT GTTTCGTCC	180
	GAGGTTTTTT GGAATCACCC GATTCAACGT GTTATACATA ATGAGCTTGA GCAGTATTGC	240
25	CGTGCTCGCT CGGGTCGCTG CCTTGAGATT GGAGCCCACC CACGCTCCAT TAATGATAAT	300
	CCTAATGTCC TCCATCGCTG CTTTCTCCAC CCCGTCGGCC GGGATGTTCA GCGCTGGTAC	360
	ACAGCCCCGA CTAGGGGACC TGCGCGAAC TGTCGCCGCT CGGCACTTCG TGGTCTGCCA	420
30	CCAGCCGACC GCACTTACTG TTTGATGGC TTTGCCGGCT GCGTTTGC CGCCGAGACT	480
	GGTGTGGCTC TCTATTCTCT CCATGACTTG CAGCCGGCTG ATGTTGCCGA GGCGATGGCT	540
35	CGCCACGGCA TGACCCGCCT TTATGCAGCT TTCCACTTGC CTCCAGAGGT GCTCCTGCCT	600
	CCTGGCACCT ACCGGACATC ATCCTACTTG CTGATCCACG ATGGTAAGCG CGCGGTTGTC	660
	ACTTATGAGG GTGACACTAG CGCCGGTTAC AATCATGATG TTGCCACCCCT CGGCACATGG	720
40	ATCAGGACAA CTAAGGTTGT GGGTGAACAC CCTTTGGTGA TCGAGCGGGT GCGGGGTATT	780
	GGCTGTCACT TTGTGTTGTT GATCACTGCG GCCCCTGAGC CCTCCCCGAT GCGCTACGTT	840
45	CCTTACCCGC GTTCGACCGA GGTCTATGTC CGGTCTATCT TTGGGGCCCGG CGGGTCCCCG	900
	TCGCTGTTCC CGACCGCTTG TGCTGTCAAG TCCACTTTTC ACGCCGTCCC CACGCACATC	960
	TGGGACCGTC TCATGCTCTT TGGGCCACC CTCGACGACC AGGCCTTTG CTGCTCCAGG	1020
50	CTTATGACGT ACCTTCGTGG CATTAGCTAT AAGGTAACGT TGGGTGCCCT GGTCGCTAAT	1080
	GAAGGCTGGA ATGCCACCGA GGATGCGCTC ACTGCAGTTA TTACGGCGGC TTACCTCACA	1140
55	ATATGTCATC AGCGTTATTG GCGGACCCAG GCGATTTCTA AGGGCATGCG CGGGCTTGAG	1200

	CTTGAACATG CTCAGAAATT TATTCACGC CTCTACAGCT GGCTATTTGA GAAGTCAGGT	1260
	CGTGATTACA TCCCAGGCCG CCAGCTGCAG TTCTACGCTC AGTGCCGCCG CTGGTTATCT	1320
5	GCCGGGTTCC ATCTCGACCC CCGCACCTTA GTTTTGATG AGTCAGTGCC TTGTAGCTGC	1380
	CGAACCCACCA TCCGGCGGAT CGCTGGAAAA TTTTGCTGTT TTATGAAGTG GCTCGGTAG	1440
10	GAGTGTCTT GTTTCCTCCA GCCCGCCGAG GGGCTGGCGG GCGACCAAGG TCATGACAAT	1500
	GAGGCCTATG AAGGCTCTGA TGTTGATACT GCTGAGCCTG CCACCCCTAGA CATTACAGGC	1560
	TCATACATCG TGGATGGTCG GTCTCTGCAA ACTGTCTATC AAGCTCTCGA CCTGCCAGCT	1620
15	GACCTGGTAG CTCGCGCAGC CCGACTGTCT GCTACAGTTA CTGTTACTGA AACCTCTGGC	1680
	CGTCTGGATT GCCAAACAAT GATCGGCAAT AAGACTTTTC TCACTACCTT TGTTGATGGG	1740
20	GCACGCCCTTG AGGTTAACGG GCCTGAGCAG CTTAACCTCT CTTTGACAG CCAGCAGTGT	1800
	AGTATGGCAG CCGGCCCCGTT TTGCCTCACC TATGCTGCCG TAGATGGCGG GCTGGAAGTT	1860
	CATTTTTCCA CCGCTGGCCT CGAGAGCCGT GTTGTGTTCC CCCCTGGTAA TGCCCCGACT	1920
25	GCCCCGCCGA GTGAGGTCAC CGCCTCTGC TCAGCTCTT ATAGGCACAA CGGGCAGAGC	1980
	CAGCGCCAGT CGGTTATTGG TAGTTGTGG CTGCACCCCTG AAGGTTGCT CGGCCTGTT	2040
	CCGCCCTTTT CACCCGGGCA TGAGTGGCGG TCTGCTAACCC CATTGGCGG CGAGAGCAGC	2100
30	CTCTACACCC GCACTGGTC CACAATTACA GACACACCCCT TAACTGTGG GCTAATTCC	2160
	GGTCATTTGG ATGCTGCTCC CCACTGGGG GGGCACCTG CTACTGCCAC AGGCCCTGCT	2220
35	GTAAGCTCGT CTGACTCTCC AGACCCCTGAC CGCCTACCTG ATGTTACAGA TGGCTCACGC	2280
	CCCTCTGGGG CCCGTCCGGC TGGCCCCAAC CGGAATGGCG TTCCGCAGCG CCGCTTACTA	2340
	CACACCTACC CTGACGGCGC TAAGATCTAT GTCGGCTCCA TTTTGAGTC TGAGTGCACC	2400
40	TGGCTTGTCA ACGCATCTAA CGCCGGCCAC CGCCCTGGTG GCGGGCTTTG TCATGTTTT	2460
	TTTCAGCGTT ACCCTGATTC GTTGACGCC ACCAAGTTTG TGATCGTGAG TGGCTTGCC	2520
45	GCGTATAACCC TTACACCCCG GCCGATCATT CATGCGGTGG CCCCGGACTA TCGATTGGAA	2580
	CATAACCCCA AGAGGCTCGA GGCTGCCTAC CGCGAGACTT GCGCCCGCCG AGGCAC TGCT	2640
	GCCTATCCAC TCTTAGGCCG TGCGATTAC CAGGTGCCTG TTAGTTGAG TTTTGATGCC	2700
50	TGGGAGCGGA ACCACCGCCC GTTGACGAG CTTTACCTAA CAGAGCTGGC GGCTCGGTGG	2760
	TTTGAATCCA ACCGCCCCGG TCAGCCCCACG TTGAACATAA CTGAGGATAC CGCCCGTGCG	2820
55	GCCAACCTGG CCCTGGAGCT TGACTCCGGG AGTGAAGTAG GCGCGCATG TGCCGGGTGT	2880

	AAAGTCGAGC CTGGCGTTGT GCGGTATCAG TTTACAGCCG GTGTCCCCGG CTCTGGCAAG	2940
	TCAAAGTCCG TGCAACAGGC GGATGTGGAT GTTGTGTTG TGCCCACTCG CGAGCTCGG	3000
5	AACGCTTGGC GGCGCCGGGG CTTTGCAGCA TTCACTCCGC AACTGCAGGC CCGTGTCACT	3060
	AGCGGCCGTA GGGTTGTCAT TGATGAGGCC CCTTCGCTCC CCCCACACTT GCTGCTTTA	3120
10	CATATGCAGC GTGCTGCATC TGTGCACCTC CTTGGGGACC CGAACATCAGAT CCCCAGCATA	3180
	GATTTGAGC ACACCGGTCT GATTCCAGCA ATACGGCCGG AGTTGGTCCC GACTTCATGG	3240
	TGGCATGTCA CCCACCGTTG CCCTGCAGAT GTCTGTGAGT TAGTCCGTGG TGCTTACCT	3300
15	AAAATCCAGA CTACAAGTAA GGTGCTCCGT TCCCTTTCT GGGGAGAGCC AGCTGTGGC	3360
	CAGAAGCTAG TGTTCACACA GGCTGCTAAG GCCGCGCACC CCGGATCTAT AACGGTCCAT	3420
20	GAGGCCAGG GTGCCACTT TACCACTACA ACTATAATTG CAACTGCAGA TGCCCGTGGC	3480
	CTCATACAGT CCTCCCGGGC TCACGCTATA GTTGCTCTCA CTAGGCATAC TGAAAAATGT	3540
	GTTATACTTG ACTCTCCGG CCTGTTGCGT GAGGTGGGTA TCTCAGATGC CATTGTTAAT	3600
25	AATTTCTTCC TTTCGGGTGG CGAGGTTGGT CACCAAGAGAC CATCGGTATC TCCCGAGGC	3660
	AACCCGTACC GCAATGTTGA CGTGCTTGCG GCGTTCCAC CTTCATGCCA AATAAGCGCC	3720
30	TTCCATCAGC TTGCTGAGGA GCTGGGCCAC CGGCCGGCGC CGGTGGCGGC TGTGCTACCT	3780
	CCCTGCCCTG AGCTTGAGCA GGGCCTTCTC TATCTGCCAC AGGAGCTAGC CTCCGTGAC	3840
	AGTGTGTGA CATTGAGCT AACTGACATT GTGCACTGCC GCATGGCGGC CCCTAGCCAA	3900
35	AGGAAAGCTG TTTTGTCCAC GCTGGTAGGC CGGTATGGCA GACGCACAAG GCTTTATGAT	3960
	GCAGGGTCACA CCGATGTCCG CGCCTCCCTT GCGCGCTTA TTCCCACTCT CGGGCGGGTT	4020
40	ACTGCCACCA CCTGTGAACCT CTTGAGCTT GTAGAGGCAGA TGGTGGAGAA GGGCCAAGAC	4080
	GGTTCAGCCG TCCTCGAGTT GGATTGTGC AGCCGAGATG TCTCCGCAT AACCTTTTC	4140
	CAGAAGGATT GTAACAAGTT CACGACCGGC GAGACAATTG CGCATGGCAA AGTCGGTCAG	4200
45	GGTATCTTCC GCTGGAGTA GACGTTTGT GCCCTGTTG GCCCTGGTT CGTGCAGATT	4260
	GAGAAGGCTA TTCTATCCCT TTTACCACAA GCTGTGTTCT ACGGGGATGC TTATGACGAC	4320
	TCAGTATTCT CTGCTGCCGT GGCTGGCGCC AGCCATGCCA TGGTGTGTTGA AAATGATTT	4380
50	TCTGAGTTTG ACTCGACTCA GAATAACTTT TCCCTAGGTC TTGAGTGCAGC CATTATGGAA	4440
	GAGTGTGGTA TGCCCCAGTG GCTTGTCAAG TTGTAACATG CGTCCGGTC GGCAGGGATC	4500
55	CTGCAGGCC CAAAGAGTC TTTGAGAGGG TTCTGGAAGA AGCATTCTGG TGAGCCGGGC	4560

	AGCTTGCTCT GGAATACGGT GTGGAACATG GCAATCATTG CCCATTGCTA TGAGTTCCGG	4620
	GACCTCCAGG TTGCCGCCCT CAAGGGCGAC GACTCGGTG TGCTCTGTAG TGAATACCGC	4680
5	CAGAGCCCAAG GCGCCGGTTC GCTTATAGCA GGCTGTGGTT TGAAGTTGAA GGCTGACTTC	4740
	CGGCCGATTG GGCTGTATGC CGGGGTTGTC GTGCCCGGG GGCTCGGGGC CCTACCCGAT	4800
	GTCGTTCGAT TCGCCGGACG GCTTCGGAG AAGAACTGGG GGCTGATCC GGAGCGGGCA	4860
10	GAGCAGCTCC GCCTCGCCGT GCAGGATTTC CTCCGTAGGT TAACGAATGT GGCCCAGATT	4920
	TGTGTTGAGG TGGTGTCTAG AGTTTACGGG GTTCCCCGG GTCTGGTTCA TAACCTGATA	4980
15	GGCATGCTCC AGACTATTGG TGATGGTAAG GCGCATTAA CAGAGTCTGT TAAGCCTATA	5040
	CTTGACCTTA CACACTCAAT TATGCACCGG TCTGAATGAA TAACATGTGG TTTGCTGCGC	5100
20	CCATGGGTTTC GCCACCATGTC GCCCTAGGCC TCTTTGCTG TTGTTCCCTCT TGTGTTGCC	5160
	TATGTTGCCCG GCGCCACCGA CCGGTAGCC GTCTGGCCGC CGTCGTGGGC GGCGCAGCGG	5220
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25	TATTCACTCCA ACCAACCCCT TTGCCCCAGA CGTTGCCGCT GCGTCCGGGT CTGGACCTCG	5340
	CCTTCGCCAA CCAGCCGGC CACTGGCTC CACTGGCGA GATCAGGCC AGGCCCTTC	5400
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30	TGCCCCATGAC ACCTCACCCG TCCGGACGT TGATTCTCGC GGTGCAATTAC TACGCCGCCA	5520
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35	GTATGCAGCC CCCCTTAATC CGCCTCTGCC GCTGCAGGAC GGTACTAATA CTCACATTAT	5640
	GGCCACAGAG GCCTCCAATT ATGCACAGTA CCGGGTTGCC CGCGCTACTA TCCGTTACCG	5700
	GCCCCTAGTG CCTAATGCAG TTGGAGGCTA TGCTATATCC ATTTCTTCT GGCCTCAAAC	5760
40	AACCACAAACC CCTACATCTG TTGACATGAA TTCCATTACT TCCACTGATG TCAGGATTCT	5820
	TGTTCAACCT GGCATAGCAT CTGAATTGGT CATCCCAAGC GAGCGCCTTC ACTACCGCAA	5880
45	TCAAGGTTGG CGCTCGGTTG AGACATCTGG TGTTGCTGAG GAGGAAGCCA CCTCCGGTCT	5940
	TGTCATGTTA TGCATACATG GCTCTCCAGT TAACTCCTAT ACCAATACCC CTTATACCGG	6000
	TGCCCTTGGC TTACTGGACT TTGCCTTAGA GCTTGAGTTT CGCAATCTCA CCACCTGTAA	6060
50	CACCAATACA CGTGTGTCCC GTTACTCCAG CACTGCTCGT CACTCCGCC GAGGGGCCGA	6120
	CGGGACTGCG GAGCTGACCA CAACTGCAGC CACCAAGGTT ATGAAAGATC TCCACTTAC	6180
55	CGGCCTTAAT GGGTAGGTG AAGTCGGCCG CGGGATAGCT CTAACATTAC TTAACCTTGC	6240

	TGACACGCTC CTCGGCGGGC TCCCGACAGA ATTAATTTCG TCGGCTGGCG GGCAACTGTT	6300
	TTATTCCCGC CCGGTTGTCT CAGCCAATGG CGAGCCAACC GTGAAGCTCT ATACATCAGT	6360
5	GGAGAATGCT CAGCAGGATA AGGGTGTTC TATCCCCAC GATATCGATC TTGGTGATT	6420
	GCGTGTGGTC ATTCAGGATT ATGACAACCA GCATGAGCAG GATCGGCCA CCCCCTCGCC	6480
10	TGCGCCATCT CGGCCTTTT CTGTTCTCCG AGCAAATGAT GTACTTTGGC TGTCCTCAC	6540
	TGCAGCCGAG TATGACCAGT CCACTTACGG GTCGTCACT GGCCCGGTT ATATCTCGGA	6600
	CAGCGTGACT TTGGTGAATG TTGCGACTGG CGCGCAGGCC GTAGCCCGAT CGCTTGACTG	6660
15	GTCCAAAGTC ACCCTCGACG GGCGGCCCT CCCGACTGTT GAGCAATATT CCAAGACATT	6720
	CTTTGTGCTC CCCCTTCGTG GCAAGCTCTC CTTTTGGAG GCCGGCACAA CAAAAGCAGG	6780
20	TTATCCTTAT AATTATAATA CTACTGCTAG TGACCAAGATT CTGATTGAAA ATGCTGCCGG	6840
	CCATCGGGTC GCCATTTCAA CCTATACAC CAGGCTTGGG GCCGGTCCGG TCGCCATTTC	6900
	TGCGGGCGCG GTTTGGCTC CACGCTCCGC CCTGGCTCTG CTGGAGGATA CTTTTGATTA	6960
25	TCCGGGGCGG GCGCACACAT TTGATGACTT CTGCCCTGAA TGCCGCGCTT TAGGCCTCCA	7020
	GGGTTGTGCT TTCCAGTCAA CTGTCGCTGA GCTCCAGCGC CTTAAAGTTA AGGTGGGTAA	7080
30	AACTCGGGAG TTGTAGTTA TTTGGCTGTG CCCACCTACT TATATCTGCT GATTTCTTT	7140
	ATTTCTTTT TCTCGGTCCC GCGCTCCCTG A	7171
	or a fifth sequence (SEQ ID NO.12):	
35	CGGGCCCCGT ACAGGTACAA ACCTGTGAGT TGTACGAGCT AGTGGAGGCC ATGGTCGAGA	60
	AAGGCCAGGA TGGCTCCGCC GTCCTTGAGC TCGATCTCTG CAACCGTGAC GTGTCCAGGA	120
	TCACCTTTT CCAGAAAGAT TGCAATAAGT TCACACAGGG AGAGACCATC GCCCATGGTA	180
40	AAGTGGGCCA GGGCATTTCG GCCTGGAGTA AGACCTTCTG TGCCCTTTTC GGCCCTGGT	240
	TCCGTGCTAT TGAGAAGGCT ATTCTGGCCC TGCTCCCTCA GGGTGTGTTT TATGGGGATG	300
45	CCTTGATGA CACCGTCTTC TCGGCGCGTG TGGCCGCAGC AAAGGCGTCC ATGGTGTGG	360
	AGAATGACTT TTCTGAGTT GACTCCACCC AGAATAATT TTCCCTGGGC CTAGAGTGTG	420
	CTATTATGGA GAAGTGTGGG ATGCCGAAGT GGCTCATCCG CTTGTACACAC CTTATAAGGT	480
50	CTGCGTGGAT CCTGCAGGCC CCGAAGGAGT CCCTGCGAGG GTGTTGGAAG AAACACTCCG	540
	GTGAGCCCGG CACTCTCTA TGGAATACTG TCTGGAACAT GGCCGTTATC ACCCATTGTT	600
55	ACGATTTCCG CGATTTGCAG GTGGCTGCCT TTAAAGGTGA TGATTGATA GTGCTTGCA	660
	GTGAGTACCG TCAGAGTCCA GGGGCTGCTG TCCTGATTGC TGGCTGTGGC TTAAAGCTGA	720

AGGTGGGTTT CCGTCCGATT GGTTTGATG CAGGTGTTGT GGTGACCCCCC GGCCCTGGCG 780
5 CGCTTCCCGA CGTCGTGCGC TTGTCGGCC GGCTTACTGA GAAGAATTGG GGCCCTGGCC 840
CTGAGCGGGC GGAGCAGCTC CGCCTTGCTG TGCG 874

or a sequence complementary thereto.

10 14. A kit comprising, in a container or separate containers, a pair of single-strand primers derived from nonhomologous regions of opposite strands of a DNA duplex fragment derived from an enterically transmitted viral hepatitis agent whose genome
15 contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

20 15. The kit of claim 15, which are derived from opposite strands of the EcoRI duplex insert in said plasmid.

25 16. A method for detecting the presence of an enterically transmitted nonA/nonB hepatitis viral agent in a biological sample, comprising preparing a mixture of duplex DNA fragments derived from the sample, denaturing the duplex fragments, adding to the denatured DNA fragments, a pair of single-strand primers derived from nonhomologous regions of opposite strands of a DNA duplex fragment derived from an enterically transmitted viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717, hybridizing said primers to homologous-sequence region of opposite strands of such duplex DNA

fragments derived from enterically transmitted nonA/nonB hepatitis agent,

reacting the primed fragment strands with DNA polymerase in the presence of DNA nucleotides, to form new DNA duplexes containing the primer sequences, and repeating said denaturing, adding, hybridizing and reacting steps, until a desired degree of amplification of sequences is achieved.

10 17. The method of claim 16, wherein the primers are derived from opposite strands of the EcoRI duplex insert in said plasmid.

15 18. The method of claim 16, for detecting the presence of viral agent in a sample of cultured cells infected with the agent.

20 19. A vaccine for immunizing an individual against enterically transmitted nonA/nonB hepatitis viral agent comprising, in a pharmacologically acceptable adjuvant, a recombinant protein derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present 25 in plasmid pTZ-RFL(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717.

30 20. The vaccine of claim 19, wherein the protein is derived from the EcoRI insert in said plasmid.

21. A vaccine for immunizing an individual against HEV comprising, in a pharmacologically acceptable adjuvant, a protein encoded by genetic sequence 406.3-2 or 406.4-2 or a fragment thereof.

35 22. In a method of isolating an enterically transmitted nonA/nonB viral agent or a nucleic acid fragment produced by the agent, an improvement which

comprises: utilizing, as a source of said agent, bile obtained from a human or cynomolgus monkey having an active infection of enterically transmitted non-A/non-B hepatitis.

5

23. The method of claim 22, wherein the bile is obtained from an infected cynomolgus monkey.

24. Human polyclonal anti-serum obtained from a 10 human immunized with a protein derived from an enterically transmitted non-A/non-B viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 15 and having ATCC deposit no. 67717.

100 90 80 70 60 50 40 30 20 10